REMARKS

By the above amendment, the title has been amended in accordance with the Examiner's suggestion, and independent claims 1 and 8 have been amended to utilize the terminology of a "non-magnetic conductive oxidized stopper layer" as well as an "oxide protective layer" which features, as recognized by the Examiner, are disclosed in the specification of this application, with the dependent claims being amended to utilize such language and therefore, applicants submit that the rejection of claims 1, 3-4 and 6-14 under 35 U.S.C. §112, second paragraph, as being indefinite, should now be overcome in light of the amended claims.

As to the rejection of claims 1, 3-4 and 6-14 under 35 U.S.C. 102(e) as being anticipated by Pinarbasi (US 6,268,985), this rejection is traversed insofar as it is applicable to the present claims, and reconsideration and withdrawal of the rejection are respectfully requested.

As to the requirements to support a rejection under 35 U.S.C. 102, reference is made to the decision of In re Robertson, 49 USPQ 2d 1949 (Fed. Cir. 1999), wherein the court pointed out that anticipation under 35 U.S.C. §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. As noted by the court, if the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Moreover, the court pointed out that inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

Applicants note that in accordance with the present invention as described at pages 4 and 5 of the specification, the magnetic head has a particular construction which includes an oxide protection film disposed on a soft magnetic free layer in order to improve ΔR with a non-magnetic high conductance oxidized stopper layer being disposed between the oxide protective layer and the soft magnetic free layer with the thickness of the non-magnetic high conductance oxidized stopper layer being selected, such that the interlayer coupling field is reduced to zero. More particularly, as described at page 4, lines 13-18 in the specification, at first, one oxide protection film is disposed on the soft magnetic free layer in order to improve ΔR. As the material for the oxide protective film, oxide such as of Ta, Ni, Nb, Ti, Hf and W can be used, with a Ta oxide being preferred with a view point of improving ΔR.

Secondly, a high conductance oxidized stopper layer is disposed between the oxide protective layer and the soft magnetic free layer. The non-magnetic high conductance oxidized stopper layer prevents diffusion of oxygen from the oxide protective layer or propagation of stresses caused by oxides as far as the soft magnetic free layer and prevents degradation of the soft magnetic characteristic of the free layer. This can prevent lowering of the sensitivity of the spin valve film and, further, prevent lowering of the output. Further, disposition of the conductive layer causes elastic scattering of itinerane electrons at the boundary between the non-magnetic high conductance oxidized stopper layer and oxide protective film to extend the mean free stroke length of itinerane electron to improve ΔR more than the existent spin valve structure. As the material for the non-magnetic high conductance oxidized stopper layer, Cu, Pd, Pt, Os, Rh, Re, Ru, Ag and Au are generally used but the materials are not restricted to the foregoings so long as they are non-magnetic and conductive. (See page 4, line 19 to page 5, line 12 of the specification) In order

to improve ΔR of the spin valve film, the combination of the oxide protective layer and the non-magnetic high conductance oxidized stopper layer is important.

Thirdly, the thickness of the non-magnetic high conductance oxidized stopper layer is selected such that the interlayer coupling field is reduced to zero. Since the sensitivity of the spin valve film is lowered as the interlayer coupling field increases, the interlayer coupling field is desirably lower. When the non-magnetic high conductance oxidized stopper layer is disposed, the thickness of the non-magnetic high conductance oxidized stopper layer can be selected such that the interlayer coupling field is substantially reduced to zero since the interlayer coupling field changes along with the thickness of the conductive layer. This can prevent lowering of the sensitivity caused by increase in the interlayer coupling field. (See page 5, lines 13 - 25 of the specification).

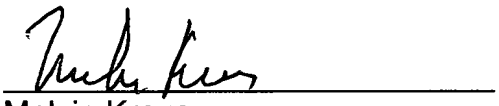
Turning to Pinarbasi, as apparent from comparison of Example 1 (Fig. 12) with Example 2 (Fig. 13), the ratio of the magnetic resistance (see dR/R(%) in Charts A & B) does not improve even though a non-magnetic conductance layer is inserted between the soft magnetic free layer and the MO oxide layer. Therefore, applicants submit that there is no disclosure in Pinarbasi that non-magnetic conductance layer is an oxidized stopper layer, as claimed, which improves ΔR of the spin valve film. Pinarbasi does not teach the above features of the invention, that is, the combination of the oxide protective layer and the non-magnetic conductive oxide stopper layer to improve ΔR of the spin valve film. Furthermore, Pinarbasi does not disclose that the thickness of the metal oxide layer is 1.0 nm or less, that the interlayer coupling field showing the magnitude of the ferromagnetic coupling between the ferromagnetic pinned layer and the soft magnetic free layer is substantially zero, and that the thickness of the non-magnetic conductive oxide stopper layer is sufficient to provide a substantially zero intermediate layer coupling field. Applicants submit that irrespective of the Examiner's contentions, Pinarbasi fails to disclose the claimed

features and such features are not inherent in Pinarbasi as is apparent from the disclosure thereof. See In re Robertson, supra. Thus, applicants submit that all claims, as amended, patentably distinguish over Pinarbasi in the sense of 35 U.S.C. 102 and should be considered allowable thereover.

In view of the above amendments and remarks, applicants request favorable action in this application.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (501.39395X00) and please credit any excess fees to such deposit account.

Respectfully submitted,



Melvin Kraus
Registration No. 22,466
ANTONELLI, TERRY, STOUT & KRAUS, LLP

MK/cee
(703) 312-6600